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|---|---|
| CHANG, AUDREY Y | |
| ART UNIT | PAPER NUMBER |
| 2872 | |

DATE MAILED: 09/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/055,890 | HONG, HYUNG KI | |
| | Examiner | Art Unit | |
| | Audrey Y. Chang | 2872 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *05 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on **July 5, 2005** has been entered.

2. This Office Action is also in response to applicant's amendment filed on June 2, 2005, which has been entered into the file.

3. By this amendment, the applicant has amended claims 1-2, 7, and 9-12.

4. Claims 1-12 remain pending in this application.

5. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Korean on January 28, 2002. It is noted, **however**, that applicant **has not filed a certified copy** of the foreign application as required by 35 U.S.C. 119(b). The applicant is respectfully noted that ONLY the cover page but not the certified **copy** of the APPLICATION is filed.

6. The rejections to claims 1 and 2 under 35 USC 112, first paragraph, with regard to newly added matters set forth in the previous Office Action are *withdrawn* in response to applicant's amendment.

### *Claim Rejections - 35 USC § 112*

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. **Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph**, as based on a disclosure which is **not enabling**, the ***corresponding complementary color coding of the left eye and right eye perspective image*** with respect to the ***color arrangement*** of the *variable color barrier* **are critical** or **essential** to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. The claims **must show** the **correspondence** between the *color coding* of the images and the *color coding of the color barrier* in order for the right eye image to go to right eye only and the left eye image to go to left eye only, as in the stereoscopic mode and **the correspondence** between the *complementary color filters* and the *left eye picture and right eye picture* to allow white light of the left eye and right picture to go to both eyes in the plane mode. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). The specification and claims **fail** to teach how could the stereoscopic image be observed by *simply* having a variable color barrier. Claims 3-6 and 8-9 inherit the rejections from their respective based claims. The specification and the claims also **fail** to teach how could the color barrier with the alternative color filters is capable of providing plane view.

**Claim 1 and 2 have been amended** to **only give** description of "*applying first voltage to the first variable filters such that the first variable filters transmit a first color and wavelength of light toward an observer while shutting off other colors and wavelengths and simultaneously applying a second voltage to the second variable filters such that the second variable filters transmit light of said other colors and wavelengths toward the observer while shutting off light of first color and wavelength so that stereoscopic picture is viewed*" is not true and will not enable the stereoscopic picture viewed. Since the criterion for the stereoscopic picture being viewed is by having the right eye image light reaches right eye of the observer **only** and the left eye image light reaches the left eye **only**. If the right eye image light and left eye image light are not properly color coded then by simply switching the variable filter WILL NOT make the left eye image light and left eye image light reach the proper eye. Since if the left eye image

and right eye image light are of the *same color component*, then the variable filter will allow both of the image light to reach the same eye which therefore destroys the stereoscopic viewing.

**A color selection and color matching is essential for making the different mode of display possible. In the *stereoscopic* mode, the first and second voltage applied on the first and second variable filters, respectively, make the color filters have complementary color relationship. The left eye picture from the first pixel encoded with the same color code as the color of the first variable filter and the left eye picture from the second pixels having same complementary color code as the complementary color of the second variable filter will be directed and receive by the left eye, and the right eye picture from the first pixels encoded with the same complementary color as the second variable filter and the right eye picture from the second pixels with the same color code as the first color of the firs variable filter will be directed and received by the right eye. In the *plane mode*, a third voltage is applied to both the first and second variable filters so that NO COLOR filtering function is present, (i.e. no more of the alternative arrangement of first and second color filters with color/complementary color present), the left eye picture and right eye picture of the first and second pixels will be all transmitted to BOTH right and left eyes as white light. Thirdly**, the phrase " applying a third voltage to both of said first and second variable filters to **transmit** light of all colors and wavelengths from both of said first and second pixels toward observer in a mixed state so that a plane picture is viewed in said plane mode" recited in claim 1 is not quite clear as for achieving the plane mode. The image light from the first and second pixels should reach **both** eyes of the observer, which is the essential criterion for achieving plane view.

**Claim 2 has been amended to include** "to apply said third voltage to said both of said first and second variable filters of said variable color barrier unit when said switch is in the plane mode ... the observer recognizes a plane picture when the third voltage is applied to the first and second variable filters" is ***not enabling***. The specification **fails** to teach how could simply by applying a third voltage to

the color variable barrier one can see plane mode. The necessary criterion for achieving plane viewing mode is "by applying the third voltage to the first and second variable filters, the variable filters will pass all colors and wavelength of image light from the first and second pixels so that both the image light for creating the left-eye picture and right-eye picture will reach **both** eyes of the observer". Simply switching the applied voltage to the variable filters WILL NOT have the magic to achieve either stereoscopic or plane view WITHOUT the corresponding matching of the color coding of the image light for creating the left eye and right eye picture respectfully with the particular color selection of the variable filters, as explicitly stated above. The claims therefore are NOT ENABLING.

**Claim 7 has been amended** to include the phrase "wherein the light scattering device transmits an incident as it is in a *separated* sate in response to a first voltage thereby creating stereoscopic picture formed of the separated left-eye picture and the right-eye picture to the observer when the light scattering device is in a stereoscopic mode and wherein the light scattering device scatters said incident light in response to a second voltage other than said first voltage thereby creating a plane picture to be observed when the light scattering device is in a plane mode" is **not enabling**. The specification **simply fails** to teach by simply applying different voltages to the light scattering device will enable either stereoscopic view or plane view. Also there is *no connection* between the light scattering device and the variable color barrier in making the device an operable device. **Furthermore**, the specification **fails to teach** in the stereoscopic mode the light scattering device is in a "separated state", rather in the stereoscopic mode the light scattering device simply passes all image light **without scattering**. The specification and the claim **fail** to teach **Firstly**, how could the color barrier is capable of achieving "such that the left-eye picture is incident to the left eye and the right eye picture is incident to the right eye of an observer" and **Secondly** how do the color barrier with alternative color filters **work with** the light scattering device to achieve the stereoscopic mode and the plane mode respectively. The applicant is once again respectfully noted by having a color barrier with alternatively arranged first color filters and second color filters **will not be**

**able to achieve** either the stereoscopic view or the plane view and will not make the left eye and right eye picture incident on the left eye and right eye respectively, but **only if the** left eye and right eye pictures are also color coded correspondingly then the filters can make color filtering selection. Please refer to paragraph above or below for the essential working principle between the color-coding of the left eye and right eye picture and the variable color barrier with alternative color filters.

**Judging from Figures 6 and 12** which best represent the devices intended for either claims 1-2 or claim 7, the essential elements and essential relationship for achieving either stereoscopic or plane view mode is (1) a display device having a *first pixels* each with a sub-pixel cell used for creating left-eye picture that is *coded* with a first color and sub-pixel cell used for creating right-eye-picture that is coded with a *complementary color* to the first color and a *second pixels* each with a sub-pixel cell used for creating left-eye picture that is coded with said *complementary* color to the first color and sub-pixel cell used for creating right-eye-picture that is coded with the *first color*, and having a *color barrier* having first and second color filters (or first and second *variable* color filters in the embodiments for claims 1 and 2 above) *alternatively* arranged and *overlapped* with portions of the said first and second pixels.

**For the case of Figure 6**, a first voltage is applied to the first variable color filter and a second voltage is applied to the second variable color filter such that the first variable filter transmits light of the first color and shutting off all other colors including the said complementary color and the second variable color filter transmits light of the complementary color and shutting off all other color including the fist color so that the image light form sub-pixels used to create lefty-eye picture in the first pixels and second pixels are properly transmitted by the *first* and *second* variable filter *respectively* to reach left eye of an observer and the image light from sub-pixels used to create right-eye picture in the first and second pixels are properly transmitted by the *second* and *first* variable *filters respectively* to reach the right eye of the observer, *respectively*, in the stereoscopic viewing mode. In the plane viewing mode, a third voltage is applied to all of the variable color filters such that the filters transmit all colors of light so that the image

light from the sub-pixels for creating the left-eye and right-eye pictures will reach **both** eyes of the observer.

**For the case of Figure 12**, in the *stereoscopic* viewing mode, a first voltage is applied to the light scattering device to transmit the image lights from the display device *without scattering*, the image lights from the sub-pixels used to created left-eye picture in the first and second pixels are properly color matched with the colors selectivity of the *first* and *second* filters respectively and are transmitted by the color filters to reach the left eye of the observer and the image lights from the sub-pixels used to create the right-eye picture in the first and second pixels are properly color matched with the color selectivity of the *second* and *first* color filters respectively and are transmitted by the filters to reach the right eye of the observer, respectively. In *the plane mode*, a second voltage is applied to the light scattering device such that the incident image lights from the sub-pixels are **scattered in all directions** and the image light from sub-pixels for creating left-eye picture and right-eye-picture will be transmitted by the first and second color filters to reach **both** eyes of the observer.

Applicant is respectfully requested to amend the claims to make it in comply with the requirements of 35 USC 112, first and second paragraphs. At this juncture the claims fail to provide a workable display apparatus.

### *Claim Rejections - 35 USC § 103*

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

**10. Claims 1-6 and 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant admitted prior art and in view of the patent issued to Wiseman et al (PN. 5,825,337).**

*The claims as indicated in the paragraphs above **fail** to provide adequate writings for describing a workable apparatus or for providing the **enablement** of the apparatus; they can only be examined in the broadest interpretation.*

**Applicant admitted prior art** teaches a *conventional stereoscopic image display device* that is comprised of a *display unit* (34, Figure 3) having a *first and second pixels* wherein each of the first and second pixels having at least one sub-pixel cell used for creating left-eye picture (sub-pixel cells denoted as "1") and sub-pixel cell use for creating right-eye picture (sub-pixel cells denoted as "2") and a *color barrier* (38) having alternatively arranged *first and second color filters* (38R1, 38C etc.) wherein the first color filters (38R1, 38R2) transmits *red color* of light and shuts off other wavelengths of light such as the green and blue colors and the *second color filters* (38C) are *cyan filters* for transmitting green and blue color lights but shuts off other color of light such as red color, (please see paragraph [0024]). The conventional stereoscopic image display device further teaches that the sub-pixel cell in the first pixel for creating left eye picture is coded to have *red color* and the sub-pixel cell in the second pixel for creating left eye picture is coded to have *green and blue colors* so that the first color filters in the color barrier transmits the red color image from the first pixel and the second color filters transmit the blue and green color light in the same pixels and blocking off all other light to ensure the image light for the left eye picture reaches the left eye only and the sub-pixel cell used to create the right eye picture is coded to have green and blue color in the first pixels and the sub-pixel cell used to create the right eye picture is coded to have red color in the second pixels so that the first color filters transmits only the red image light in the second pixels and the second color filters transmit only the blue and green image light in the first pixel to the right eye for stereoscopic viewing, (please see Figure 3).

This reference has me all the limitations of the claims with the exception that it does not teach explicitly that the color barrier are switchable wherein a first and a second voltage are applied to the first and second color filters to switch the color filters to have the claimed color filtering properties. The

reference also does not teach that the color barrier is switched to no color filtering function for creating a plane viewing mode. However, switchable color filter is known in the art as explicitly taught by **Wiseman** et al in an autostereoscopic image display device wherein color filter (12, Figure 7), having multiple regions (13) each can be individually controlled and driven to have different color filtering function, is included to provide red, green or blue color filtering functions, (please see column 5, lines 20-36). It would then have been obvious to one skilled in the art to apply the teachings of **Wiseman** et al to modify the color barrier of the conventional stereoscopic image display device with a switchable color filter for the benefit of allowing individual switching and controlling of the color filter regions of the color barrier so that the image display quality can be better controlled. With regard to the feature concerning the voltage application also with regard to claim 5, Wiseman et al teaches that the switchable color filter may be based on switching liquid crystal (which implicitly needs the application of voltage and different voltages for creating different color, please see column 2), or may be color shutter (please see column 5), which implicitly also requires application of voltages. Although theses references do not teach about the plane mode explicitly, however since the plane mode criterions is very standard knowledge in the art it would have been obvious to one skilled in the art to make the color barrier without the specific color selection to allow all the image light to reach both eyes for the benefit of making the display device also capable of displaying plane image.

With regard to claim 2, the image signal converter is included to combine video signals from the two camera used to take the photographs of an object at different angles, (necessary for creating stereoscopic viewing), (please see Figures 1 and 3).

With regard to claims 3 and 4, the conventional stereoscopic image display discloses to have the color barrier (38) placed in front of the display device, (pleas see Figures 1 and 3), although this reference does not teach that it can also be placed at rear side of the display, such modification is considered to be obvious since the color barrier is used to provide color selection and blocking of the image light to have it

in front or at rear side of the display device will not change this function, this modification therefore is an obvious matter of design choice to one skilled in the art to meet one's specific desire and preference.

With regard to claims 10 and 11, each of the color filters overlaps half portion of the first and second pixels, (please see Figure 3).

**11. Claims 7-9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Hematite et al (PN. 5,751,479).**

*The claims as indicated in the paragraphs above **fail** to provide adequate writings for describing a workable apparatus or for providing the **enablement** of the apparatus; they can only be examined in the broadest interpretation.*

**Hamagishi** et al teaches a *three dimensional display* that is capable of being switched between stereoscopic mode and 2D display mode, wherein the apparatus is comprised of *a liquid crystal display device* (1, Figure 7) serves as the image display device, a *light source* (2) and *a color filter* (3), comprises different filtering regions *alternatively* arranged that each filters light in a different color that includes complementary color filter regions such as red and green, serves as the *color barrier*, and a *polymer dispersed liquid crystal panel* (17), serves as the *light scattering device*. The polymer dispersed liquid crystal panel serves as the light scattering device is switched between a *translucent state* (ON state) and a *scattering state* (OFF state) to enable either the stereoscopic view or plane view, (please see column 7, lines 54-67) and they are operated as follows: When the polymer dispersed liquid crystal panel is switched *on*, the color light from the color filter barrier incidents on the display panel *without scattering* in such a way that the color light matching the color coded sub-pixel cells used for creating right eye or left eye picture on the display unit are illuminated and transmitted to reach the right eye and left eye *respectfully* for creating stereoscopic view. When the LCD panel (17) is switched *off* the light from the color filter is *scattered* and then *combined* to become white light so that the color coded sub-pixels for

creating the left eye and right eye picture are all illuminated by the white light and all reach both eyes of the observer such that a 2D image display mode is presented, (please see Figures 7-8 and columns 7-8).

This reference does not teach explicitly that the image signals are obtained by photographing an object at a different angle on a display unit. However such method is the most common practice in the art to obtain parallax images of an object. It would then have been obvious to one skilled in the art to modify the method accordingly to obtain the parallax images of the object photographically for the displaying of stereoscopic image.

**With regard** the **amended feature** concerning the "first and second pixels each with sub-pixel cells used for creating left eye picture and sub-pixels cells used for creating right-eye picture", Hamagishi et al teaches such explicitly, since the pixels (1R, 1G, 1B, Figures 7 and 8), include both pixels for creating the right eye and left eye picture respectively.

With regard to claim 9, the mode conversion controller is included particularly for switching the polymer dispersed liquid crystal panel between On and OFF state for operating in stereoscopic and plane mode respectively.

**With regard to claim 12**, concerning the overlapping between the filters in the color barrier unit and portions of the first and second pixels, such is explicitly taught in Figures 7 and 8 of Hamagishi et al. The exact portion of overlapping is considered to be obvious modification to one skilled in the art since it has to do with the physical distance between the display device, the size of the pixels and the size of the color filters and the modification would have the benefits of achieving best image quality, reducing cross talk and reducing the size of the display apparatus.

***Response to Arguments***

12. Applicant's arguments filed June 2, 2005 have been fully considered but they are not persuasive. The newly amended claims have been fully considered and they are rejected for the reasons stated above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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